



MEMORANDUM

Date: August 19, 1999

To: Testing Organizations, Universities and Consultants
EPA/NSF Package Drinking Water Systems Environmental Technology
Verification (ETV) Pilot

From: Bruce Bartley, Pilot Manager

Re: Request for Proposals for ETV Protocol Validation Testing

Additional funds were received from the EPA to validate test plans for the Package Drinking Water Treatment Systems ETV Pilot. Test plans to be validated are for technologies for which the market demand will likely occur in future years. An example of this future demand involves treatment technologies for arsenic. When the EPA establishes the final arsenic maximum contaminant level (MCL), which is scheduled for final promulgation in January 2001, the market for arsenic treatment systems will increase. There is a need to conduct verifications against the arsenic protocol and test plans during the pilot phase to correct any unforeseen challenges or difficulties. Without this validation effort, future testing against these untried protocols and test plans could potentially hinder the verification of technologies at a time of new regulations when stakeholders have the greatest need for the results of verified technologies.

NSF will validate the protocols and the test plans associated with EPA rules that may be completed after the pilot period. Presently, the following EPA rules are scheduled for promulgation after the pilot period ends:

- Ground Water Rule - November 2000,
- Proposed Radionuclides Rule - November 2000,
- Arsenic - January 2001,
- Stage 2 Disinfectants/Disinfection By-Products Rule - May 2002, and
- Stage 2 (Long-term) Enhanced Surface Water Treatment Rule - May 2002.

The protocols for which the EPA and NSF desire validation and that address the above list of rules are on-site disinfection, disinfection by-products and their precursors, arsenic, and nitrate (an ever-present contaminant).

NSF proposes to conduct the protocol validation testing in a similar manner with slight modifications as done for the present market-demand verification testing except that NSF and the EPA want to attain these three goals:

1. Validating protocols and test plans,
2. Demonstrating innovative and creative partnerships or relationships to achieve leveraged and/or private sector funding for testing and reporting,
3. Verifying technologies useful in meeting future drinking water regulations.

The process for conducting protocol validation studies is outlined as follows:

1. NSF requested notification of technologies from vendors rather than wait for the market to apply for verification. NSF requested specific technologies based on test plans that are already developed that will likely include the technologies for the treatment of disinfection by-products and their precursors, arsenic, nitrate and for on-site disinfection. NSF mailed this request for technologies on July 21, 1999. Responses to this request and previous vendor notifications are available to the organizations interested in proposing to conduct protocol validation studies (see Attachment A).
2. NSF contacted water utilities and state regulatory agencies on its mailing list and requested test sites from them on July 21, 1999. Responses to this request are available to the organizations interested in proposing to conduct protocol validation studies (see Attachment B). Testing organizations are also encouraged to find other test sites that are appropriate for validation testing. NSF will assist organizations in locating test sites if they are having difficulty.
3. NSF is requesting proposals from organizations, including the NSF-qualified FTOs, to validate protocols (this memorandum) that will meet the goals previously discussed. There are four categories of validation studies:
 - Disinfection By-Product (DBP) and DBP Precursor removal or treatment
 - Arsenic removal or treatment
 - Nitrate removal or treatment
 - On-site microbiological inactivation or disinfection treatment.

Any team may submit a proposal to NSF to validate the pertinent EPA/NSF ETV PDWTS Protocol and Test Plans that cover the above four categories. A team may submit more than one proposal. Vendors and other partners providing private sector funds may appear in multiple proposals submitted to NSF.

4. NSF will then select an organization to conduct a protocol validation study based on the selection criteria below:
 - (a) Field Testing Organization Qualification (mandatory) - The team must meet the criteria to become a qualified Field Testing Organization (FTO) at the time they submit their proposal. This is critical to maintain quality in the ETV pilot. However, organizations that are already qualified must not re-submit qualification materials. *If the team does not meet this criteria, the proposal will be considered unacceptable.*
 - (b) Private Sector Funding and ETV Matching Fund Limit (mandatory) - Proposals must include an estimate of the total cost for testing and the sources to recover testing costs (e.g., ETV, vendor, water utility etc.). Proposals shall describe creative partnerships or relationships to demonstrate private sector funding. This can be done with in-kind services from any source except labor and equipment from the vendor. Other sources

of funding can pay for costs (labor and expenses). Important that the team identify and show proof of the above relationships and partnerships. The ETV project will contribute no more than 75% of total testing costs, and no more than \$100,000 for one protocol validation study. Proposals that request the least amount of funding per product from the ETV and that maximize the number of products tested per protocol will rank highest. *If the team's proposal does not meet the above criteria, the proposal will be considered unacceptable.*

- (c) Schedule - The team has to have a reasonable and achievable schedule. Proposals with earliest delivery schedules will be ranked higher than those with later schedules. However, unrealistic schedules will be ranked very low. Proposals with a schedule involving multiple vendor product testing, multiple test plans or multiple sites will rank as high as a proposal with a single product testing if the schedule shows submittal of the draft report to NSF by the May 31, 2000 deadline. *Any schedule where the draft report to NSF is delivered after May 31, 2000 is considered unacceptable.*
- (d) Proven Track Record for Timeliness and Quality - The team shall demonstrate it has past experience of delivering quality work products done on time; examples include ETV, EPRI and AWWRF projects. The team must submit the names and telephone numbers of their references as part of their proposal (references can include NSF). Teams chronically late and those with poor work quality will rank lower than other teams. The team shall also demonstrate they have the ability and capacity to do the protocol validation study along with their other assignments and workload. Resumes of key personnel at both senior and junior levels shall be submitted. The resumes shall include relevant drinking water experience and other work commitments. Proposals shall describe the management structure and a description of roles and responsibilities of key personnel involved in the proposed validation study. Finally, proposals shall demonstrate that the team has an internal quality management plan or procedure in place that includes the laboratory or other component of the team. A copy of the procedure should be submitted to NSF. *Any proposal submitted without addressing the above criteria will be considered unacceptable.*
- (e) Multiple Vendors and Test Plans - Proposals involving more than one vendor will be ranked higher than proposals involving a sole vendor. Proposals for validating a protocol that involve multiple test plans (hence multiple technologies) will be ranked higher than proposals involving one test plan.

Other Information:

The process for verification where a Field Operations Document (FOD) is prepared, and testing and reporting are conducted with the NSF's quality assurance oversight, will remain the same. FODs are to be prepared after proposals are selected. An FOD is not required to be submitted when the proposal is submitted.

Due Dates:

Proposals to perform validation testing shall be received by NSF no later than September 20, 1999. Once NSF selects the winning proposals, the team or organization will be notified by October 4, 1999. NSF will require the organizations with winning proposals to submit FODs for the validation testing no later than November 1, 1999. If an organization fails to submit by this date, another proposal will be chosen.

Proposals should be submitted to:

Mr. Bruce Bartley, Project Manager
NSF International
789 Dixboro Road
Ann Arbor, Michigan 48103
(734) 769-5148

Attachment A

| Company Name | Model Name | Contaminants | Technology Type | Contact name, phone | Contact Addresses |
|----------------------------|--------------|---|---|---|--|
| ADI International Inc. | Media G2 | arsenic, lead, copper, uranium | Arsenic removal adsorption filter media | Eric Winchester (506)451-7407 elw@adi.ca | 1133 Regent Street, Fredericton, NB Canada, E3B3Z2 |
| Aquionics | | | UV | Rob Grob, 606-341-0710 | |
| Calgon Carbon Corp. | unknown | nitrate | Ion exchange carousel | Gary Van Stone, 412/787-6190, vanstone@calgoncarbon.com | |
| EcoMat, Inc. | DeNi | Nitrate | Biological Reduction | Dr. Jerry L. Shapiro 510/783-5885 fax 510/783-7932 | 26206 Industrial Blvd, Hayward, CA 94545 |
| Environmental Products USA | EPRO series | fluoride | reverse osmosis | Dale Langefels 800/828-2447 / David Powell 941-480-9101 | 505 Morris Drive, Englewood, FL 34223 |
| Environmental Products USA | DELTA series | bacteria, viruses, nitrate, arsenic, SOCs, sulfates, fluoride | reverse osmosis | Dale Langefels 800/828-2447 / David Powell 941-480-9101 | 505 Morris Drive, Englewood, FL 34223 |
| Exceltec International | | microorganisms | hypochlorite generator | Brian Reidel 281-274-8432 fax 281-240-6762 | 1110 Industrial Blvd., Sugar Land, TX 77478 |
| Hungerford & Terry | | arsenic, lead, copper, uranium, nitrate | Ion exchange | Ken Sayell VP; 609/881-3200 x111 fx ; 609/881-6859 | |
| Hungerford & Terry | | arsenic, lead, copper, uranium, nitrate | adsorptive media e.g., iron-oxide and zeolite | Ken Sayell VP; 609/881-3200 x111 fx ; 609/881-6859 | |

Attachment A (continued)

| Company Name | Model Name | Contaminants | Technology Type | Contact name, phone | Contact Addresses |
|---|--------------|---|--------------------------|---|--|
| Ionics Inc. | | micro organisms | UV, Ozone | Antonia von Gottberg 617-926-2510 ext.385 fax 617-926-4303 | 65 Grove St, Watertown, MA 02472-2282 |
| Ionics Inc. | | perchlorate removal | EDR membrane | Antonia von Gottberg 617-926-2510 ext.385 fax 617-926-4303 | 65 Grove St, Watertown, MA 02472-2282 |
| KEECO | K250 | arsenic | coagulation / filtration | Jimmie Andrews, President, Phone (425) 778-7165 Email: keeco@nwlinc.com | |
| KEECO | K500 | arsenic | coagulation / filtration | Jimmie Andrews, President, Phone (425) 778-7165 Email: keeco@nwlinc.com | |
| Kinetico | TL series RO | inorganics | reverse osmosis | Glen Latimer 440-564-9111 | |
| Krudico | | nitrate | ion exchange | Dave Krud/Gary Kruse 712-688-2284 | 308 East 4th P.O. Box 248 Auburn, Iowa 51433 |
| Lady of the Lakes | | Bacteria, viruses, giardia, cryptosporidium | ozone | Mark Johnson 541- 469-3354 fax 541-469-2180 | P.O. Box 7140 Brookings, OR 97415 |
| Met Pro Corporation - Duall Division | | radon, sulfates | Air stripper | Brian Smith 517/725-8184 | |
| MIOX Corp | | microbiological inactivation | on-site halogen | Rodney Herrington 505-343-0090 fax 505-343-0093 | 5500 Midway Park Place NE Albuquerque, NM 87109 |

Attachment A (continued)

| Company Name | Model Name | Contaminants | Technology Type | Contact name, phone | Contact Addresses |
|--------------------------------|------------|---|---|---|---|
| Nitrate Removal Technologies | BioDen | nitrate | biological disinfection | Greg Mann, 303/274-1426 fx 303/237-1103 | 1667 Cole Blvd. Suite 400 Golden, CO 80401 |
| OXI Co. | OXI - 6B | bacteria, viruses, giardia, crypto sporidium | on-site halogen (selective membrane) | Charles Henry 803-831-0494 fax 803-831-7178 | 10 Southern Place Lake Wylie, SC 29710 |
| Pacific Ozone Technology | unknown | | ozone | Peter Landgraf, 925-634-7252, fx - 925-634-7291, pacozone@earthlink.net | 730 Concord Ave., Brentwood, CA 94513 |
| PCI Membrane Systems | Fyne Plant | Bacteria, viruses, giardia, Cryptosporidium, DBPPs | nanofiltration | David Pearson (513) 575-3500 x. 305 | |
| PPG Industries | | microorganisms | calcium hypochlorite chlorination system | Larry Grubb 412-434-3692 | One PPG Place, Pittsburgh, PA 15272 |
| Praxair-Trailgaz Ozone Company | | microbiological inactivation | ozone | Mr. Stewart K. Mehlman, 513-530-7711 and fax @ 513-530-7702 | 11502 Goldcoast Drive, Cincinnati, OH 45249 Email: ptoc@praxair.com |
| Project Earth Industries Inc. | | arsenic | adsorptive media | Gregory C. Gilles, 770-458-6964 | gcgilles@aol.com 2065 Peachtree Court, Suite 208, Atlanta, GA 30341 |
| Scientific Utilization Inc. | SHOX | bacteria, viruses, giardia, cryptosporidium, nitrate, organic color removal | ozone in conjunction with high intensity submerged arc for organic color removal and disinfection | John Spielman 205-772-8555 fax 205-772-0073 | 201 Electronics Blvd. S.W Huntsville, AL 35824 |

Attachment A (continued)

| Company Name | Model Name | Contaminants | Technology Type | Contact name, phone | Contact Addresses |
|-------------------------------------|---------------------|---|---|---|---|
| Scientific Utilization Inc. | SHOX | bacteria, viruses, giardia, cryptosporidium, nitrate, organic color removal | ozone pulsed electrical fields in conjunction with ozone for organic color removal and disinfection | John Spielman 205-772-8555 fax 205-772-0073 | 201 Electronics Blvd. S.W Huntsville, AL 35824 |
| Tempest Environmental Systems, Inc. | BEE-DESAL 100/30 | Bacteria, Viruses, Giardia, Cryptosporidium, Nitrate, Arsenic, DBPPs | Granular Activated Carbon Adsorption | Roddy Tempest (919) 688-1460 | |
| Trojan | | | UV | John Langan, 519-457-3400 (fx 3030) | |
| US Filter/ Wallace & Tiernan | | | On-site halogens | Ron Casatelli, 1901 West Garden Road, Vineland, N.J. 08236, fax: 609-507-4079 | |
| Venturi Aeration, Inc. | | tetrachlorethane, radon, disinfection by-products and precursors | Air stripper | Gary L. Smith, 603-635-8239 or fax @ 603-635-1449 | 41 Tallant Road, Pelham, NH 03076-2236 |
| Vulcan Industries | | microbiological inactivation | Chlorine Dioxide generator | Maurice Guitierrez 906/375-2314 x 368 | |
| Water Health International | UV Waterworks ULTRA | microbiological inactivation | ultraviolet light | David Greene or Alice Hughey, 707-252-9092 or 510-845-4371 | 1700 Soscol Ave. Suite 5 Napa, CA 94559 |
| World Wide Water | unknown | bacteria, viruses, nitrate, arsenic, SOCs, sulfates, fluoride | reverse osmosis | Tim Beall, 310/372-0165, fx 310/372-1361 | |

Attachment B

| Site Name | Source Water Description | Contaminants | Contact organization, name, phone | Contact Address & e-mail | Willing to contribute in-kind services? | Willing to cost share? |
|---|---|---|--|---|---|------------------------|
| Morris Wetland Management District | Ground water | Arsenic | U.S. Fish & Wildlife Service - Mr. Gaylord Bober, 320-589-1001 fax: 320-589-2624 | Route 1, Box 877, Morris, MN 56267 gaylord_bober@fws.gov | Y | -- |
| Newtok, Alaska | Ground water under influence of surface water, >100 color units, >0.5 NTU, elevated TDS | DBPs, microbiological | Alaska Small Water Training & Technical Assistance Center - Dr. Craig Woolard, 907-786-1863 fax 907-786-1079 | University of AK Anchorage, School of Engineering, 3211 Providence Drive, Anchorage, AK 99508 afcrw@uaa.alaska.edu | Y | Y |
| 10 WTP plants in Salt Lake City area, owned & operated by 5 utilities | 10 surface water plants (8 conv trtm, 2 direct filtr) sizes: 180, 130, 45, 42, 26, 25, 20, 10 & 6 MGD | DBPs, microbiological (possible site w/ Arsenic in Park City, UT) | Utah Water Alliance - Dr. Eva Nieminski, 801-536-4189 fax 801-536-4211 | 150 N. 1950 W., P.O. Box 144830, Salt Lake City, UT 84114-4830 eniemins@deq.state.ut.us | Y | N |